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Wayne J. Hamilton

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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/715,697
Filing Date: November 18, 2003
Appellant(s): HAMILTON, WAYNE J.

Hugh P. Gortler
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 08/23/2010 appealing from the Office action mailed 12/18/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 7-10, and 14-16

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

3,942,387	Stone et al.	3-1976
3,803,934	Yokel	4-1974
2,967,980	Ovshinsky	3-1956

"Gear Types, Spur, Helical, Bevel, Rack and Pinion, Worm", Engineers Edge
Solutions by Design,

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(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7, 9, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ovshinsky US 2,967,980.

Ovshinsky discloses:

- a first shaft (304); a spur gear (314) mounted to the first shaft;
- a second system including: a second shaft (302, 300),
- the first and second shafts having an angular variance greater than zero degrees (this can clearly be seen in figure 10);
- a face gear (306, 310, 312) including a hub (306) mounted to the second shaft (300, 302)
- an angled gear flange (310) surrounding the hub (306), and a plurality of gear teeth (see 312 in figures 10 and 11) on the gear flange,
- the face gear in mesh with the spur gear (312 is shown meshing with 314 in figure 10)

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- wherein a first vector normal to an outside surface of the angular flange (see line which is normal to dash-dot line through gear teeth 312) and a second vector normal to the second shaft (axis of 300, 302) form an angle that is equal to the angular variance of the first and second shafts (this can be deduced upon viewing figure 10)
- wherein the teeth of the face gear are formed by a precision grinding method (product by process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. See MPEP 2113).

Regarding claim 15,

- first and second shafts that are non-parallel (304, 300, 302);
- a spur gear on the first shaft (314);
- a face gear (306, 310, 312) on the second shaft,
- the face and spur gears in constant mesh (this can be seen in figure 4),
- the face gear including a hub (306) on the second shaft,
- an angled flange (310) around the hub,
- gear teeth (312) on the angled flange,
- the flange angled so the face gear achieves line contact with the spur gear when the gears are in mesh (this can be seen in figure 10).

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-9, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokel USP 3,803,934 in view of Ovshinsky US 2,967,980 (as discussed above).

Yokel discloses:

- a first shaft (10); a gear (18) mounted to the first shaft;
- a second system including: a second shaft (40),
- the first and second shafts having an angular variance greater than zero degrees (C3/L15-20);
- a face gear (44) including a hub mounted to the second shaft (40)
- an angled gear flange (see @ 44 in figure 1) surrounding the hub, and a plurality of gear teeth (these can clearly be seen in figure 1) on the gear flange,
- the face gear in mesh with the gear (44 is shown meshing with 18 in figure 1)
- wherein the second system includes an engine (C2/L14-15) for driving the first shaft and a transmission (see transmission in abstract) driven by the second shaft

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- wherein the teeth of the face gear are formed by a precision grinding method (product by process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. See MPEP 2113).
- wherein the first and second shafts have an angular variance of no more than 30 degrees (C3/L15-20).

Regarding claim 15,

- first and second shafts that are non-parallel (10 and 40);
- a first gear on the first shaft (18);
- a face gear (44) on the second shaft,
- the face and first gears in constant mesh (this can be seen in figure 4),
- the face gear including a hub (see inside portion of gear 44) on the second shaft,
- an angled flange (see angle of flange of gear 44) around the hub,
- gear teeth (see gear teeth of gear 44) on the angled flange,

Yokel discloses utilizing meshing gears to transmit motion between angled shafts.

Yokel does not disclose a spur gear meshed with a low angle face gear.

Ovshinsky teaches a spur gear (314) meshed with a face gear (312) to transmit motion, also between angled shafts.

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Because both Yokel and Ovshinsky teach utilizing meshing gears to transmit motion between angled shafts, it would have been obvious to one having ordinary skill in the art at the time of the invention to simply substitute one known gear pair which transmits motion between angled shafts for another known gear pair that also transmits motion between angled shafts to achieve the predictable result of transmitting motion between angled shafts.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stone et al. US 3,942,387 in view of Ovshinsky US 2,967,980.

Stone et al. discloses:

- a first shaft (12);
- a gear (18) mounted to the first shaft;
- a second shaft (32), the first and second shafts having an angular variance greater than zero degrees (C2/L32);
- a face gear (30) including a hub (see portion of 30 shown radially inside of reference character 30 in figure 1) mounted to the second shaft (32),
- an angled gear flange (see solid portion of 30 immediately adjacent gear teeth shown at 30) surrounding the hub, and a plurality of gear teeth on the gear flange (shown at 30 in figure 1), the face gear in mesh with the spur gear (30 is shown meshing with 18),
- an engine (C2/L14) for driving the first shaft and a transmission (28) driven by the second shaft.

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- wherein the engine and transmission are a rotary aircraft engine and transmission (see "Helicopters" in title).

Stone discloses utilizing meshing gears to transmit motion between angled shafts.

Stone does not disclose a spur gear meshed with a low angle face gear.

Ovshinsky teaches a spur gear (314) meshed with a face gear (312) to transmit motion, also between angled shafts.

Because both Stone and Ovshinsky teach utilizing meshing gears to transmit motion between angled shafts, it would have been obvious to one having ordinary skill in the art at the time of the invention to simply substitute one known gear pair which transmits motion between angled shafts for another known gear pair that also transmits motion between angled shafts to achieve the predictable result of transmitting motion between angled shafts.

In addition the gear pair taught by Ovshinsky further comprises:

- wherein a first vector normal to an outside surface of the angular flange (see line which is normal to dash-dot line through gear teeth 312) and a second vector normal to the second shaft (axis of 300, 302) form an angle that is equal to the angular variance of the first and second shafts (this is inherent and can be easily deduced from basic geometry upon analyzing figure 10).

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(10) Response to Argument

Appellant argues "All pending claims recite a face gear. A face gear is a term of art. It is a different type of gear than a spur gear or a bevel gear or a helical gear. The Appendix section includes a copy of a web page from http://www.Engineersedge.com/gears/gear_types.html which describes and differentiates face gears, spur gears, bevel gears and helical gears. The copy of the web page was made of record as part of the response filed on 26 Jan. 2009. It is provided in Appendix IX. Ovshinsky U.S. Patent No. 2,967,980 is made of record. Ovshinsky also differentiates face gears from bevel gears. For instance, compare face gear 122 in Figure 8 (column 7, lines 31-33) to bevel gear 306/310/312 in Figure 10 (column 8, lines 72-73). The bevel gear has a sleeve 306 with an annular flange 310 normal to the sleeve 306, and inclined bevel teeth 312 at a perimeter of the flange 310. The face gear 122 has a hub, a flange normal to the hub, and teeth normal to a surface of the flange."

In response, appellant's arguments lack merit. The document referenced above shows a "face gear" as a gear in which the shafts are oriented at 90 degrees to one another, while appellant's "face gear" is definitively "no more than 30 degrees" (see claim 14, and appellant's specification page 2, line 12). Therefore, appellant's argument is clearly spurious, as the term "face gear", as defined by appellant, encompasses a gear system including shafts encompassing an angle less than 30 degrees. The only logical interpretation to be gleaned from appellant's choice of the term "face gear" is one in which the teeth are *angled* towards a gear face, as this is what is shown in appellant's

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drawings and described in appellant's specification (appellant's figure 2, and appellant's specification page 2, line 12). Is appellant implying that their invention is something other than what has been claimed and described? Since the definition implied by appellant's argument is repugnant to appellant's own disclosure, the argument is clearly spurious and meant to cloud the issue. The appellant references gear 122 of Ovshinsky to support their position; however gear 122 was NOT USED IN THE REJECTION (emphasis added). Here again, the appellant is attempting to cloud the issue by implying a narrow definition of the term "face gear" which appellant's own invention does not meet. The argument boils down to comparing appellant's figures 2 and 3, which show a gear with teeth angled slightly towards a gear face. Since Ovshinsky also clearly shows a gear (310, 312) with teeth angled slightly towards a gear face, the claim is clearly anticipated regardless of appellant's contrivances.

Appellant argues "The '102 rejection contains factual deficiencies. Ovshinsky does not describe a face gear that meshes with a spur gear. Ovshinsky does not describe a face gear having an angled flange, let alone a flange having all of the features recited in base claims 7 and 15. Ovshinsky discloses a power steering mechanism for a vehicle. Figures 10- 11 and col. 8, lines 58-75 describe a steering wheel having upper and lower sections 300 and 302. A sleeve 306 is connected to the lower section 302, an annular flange 310 surrounds the sleeve 306, and bevel teeth 312 are formed at a periphery of the flange 310. The bevel teeth 312 engage a pinion gear 314 at the end of a power output shaft 304. The office action alleges that element 306/310/312 is a face gear, but Ovshinsky does not support the allegation. Ovshinsky

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describes element 306/310/312 as a bevel gear (col. 8, lines 72-73). Moreover, the element 306/310/312 does not have a first vector normal to an outside surface of an angular flange 310 and a second vector normal to the shaft section 302 to form an angle that is equal to the angular variance of the first and second shaft sections 302 and 304. Ovshinsky is silent about these vectors.”

In response, the mere fact that Ovshinsky “describe(s)” the gear as a bevel gear cannot indicate a factual deficiency, since Ovshinsky clearly SHOWS a “face gear” (310, 312) as defined *de facto* by the appellant. That is to say, Ovshinsky clearly shows a gear which has teeth angled slightly towards a face identical to appellant’s disclosure. Despite appellant’s improper use of semantics as discussed above, the respective claims are clearly anticipated.

Appellant argues “Ovshinsky does show a face gear 122 in Figure 8. The face gear 122 is fixed to a transfer shaft 124 (column 7, lines 31-33), and engages pinions 118 and 120, which are fixed to a drive shaft 98 (column 7, lines 26-30 and 59-61).”

In response, appellant’s argument is irrelevant and appears to be an attempt to misrepresent the pertinent issues of the case. As discussed above Ovshinsky’s gear 122 is not used in any of the outstanding rejections, and is therefore irrelevant as to the question of whether or not Ovshinsky’s gear (310, 312) anticipates the claims.

With respect to claim 15, appellant argues “Ovshinsky is silent about the face gear 122 having an angled flange, wherein the flange is angled so the face gear 122 achieves line contact with the gears 118 and 120 when the gears are in mesh. Thus,

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Ovshinsky does not describe each and every feature recited in base claim 15.

Therefore, the '102 rejection of claim 15 should be withdrawn."

In response, here again, appellant's argument is irrelevant and appears to be an attempt to misrepresent the pertinent issues of the case. As discussed above Ovshinsky's gear 122 is not used in any of the outstanding rejections, and is therefore irrelevant as to the question of whether or not Ovshinsky's gear (310, 312) anticipates the claims.

With respect to claims 7-9 and 14-16, appellant argues "The key to supporting any rejection under 35 U.S.C. §103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.* noted that the analysis supporting a rejection under 35 U.S.C. §103 should be made explicit. "Rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness" (citations omitted). Yokel discloses a transmission that transmits power to an inclined propeller shaft 4. The transmission includes a bevel gear 18 that is journaled on an input shaft 10. The bevel gear 18 is of the tapered helical type, having a front end of smaller diameter [than its back end] (column 3, lines 57+). The transmission further includes an output shaft 40, which is inclined at approximately 7 degrees of horizontal. A large tapered helical gear 44 on the output shaft 40 is in constant mesh with the bevel gear 18 (column 3, lines 26+). Yokel does not disclose face gears. Yokel proposes two tapered helical gears that are in constant mesh to transmit power between non-parallel shafts 10 and 40.

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Ovshinsky does not teach or suggest using a face gear in place of Yokel's helical gears. As discussed in Argument I, Ovshinsky does not teach or suggest a face gear having an angled flange. Moreover, Ovshinsky does not teach or suggest the use of a face gear to transmit power between shafts that are inclined (such as Yokel's shafts 10 and 40). Ovshinsky teaches the use of bevel gears to transmit motion between shafts that are inclined (e.g., shafts 302 and 304)."

In response, Yokel is not relied on for the claimed feature [a face gear in mesh with a spur gear], as implied by appellant. Rather, the '103 rejection clearly relies on Ovshinsky to teach this feature. Ovshinsky clearly discloses this feature as disclosed and argued above. Further, because both Yokel and Ovshinsky teach utilizing meshing gears to transmit motion between angled shafts, it would have been obvious to one having ordinary skill in the art at the time of the invention to simply substitute one known gear pair which transmits motion between angled shafts for another known gear pair that also transmits motion between angled shafts to achieve the predictable result of transmitting motion between angled shafts. Regarding the "angled flange", it is clear that Ovshinsky clearly discloses this feature as can be seen in figure 10 between reference characters 310 and 312.

Appellant argues "Therefore, the combined teachings of Yokel and Ovshinsky do not produce a machine having all of the features recited in base claim 7. Specifically, there is no teaching or suggestion in either patent to use a face gear having an angled flange to transmit power between inclined shafts. More specifically, there is no teaching or suggestion in either patent to use a face gear having an angled flange, wherein a first

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vector normal to an outside surface of the flange and a second vector normal to the second shaft form an angle that is equal to the angular variance of the inclined shafts. Ovshinsky teaches the use of bevel gears to transmit motion between shafts that are inclined. Yokel teaches the use of bevel and helical gears. Thus, the office action omits elements necessary for establishing prima facie obviousness of base claim 7. Due to this factual deficiency, the '103 rejection of claims 7-9 and 14 should be withdrawn."

In response, regarding appellant's claim that "Ovshinsky teaches the use of bevel gears to transmit motion between shafts that are inclined", appellant is factually incorrect. Referencing figure 10 of Ovshinsky, it is clear that 314 is NOT a bevel gear. In fact, gear 314 is described by Ovshinsky as a "drive pinion", and is structurally equivalent appellant's claimed "spur gear" since no claimed distinction exists. Further, Ovshinsky's gear (312, 310) is structurally equivalent to appellant's claimed "face gear" despite appellant's spurious attempt to imply otherwise. In addition, one of ordinary skill in the art would certainly recognize the predictable result of simply substituting a known gear pair for another. This is especially true as there is clear motivation to do so, since both gear pairs of Yokel and Ovshinsky transmit power between angled shafts. One of ordinary skill in the art would recognize that either type of gear pair can be used to transmit power between angled shafts. Further no factual deficiency exists. Appellant's claimed vectors are an inherent/implicit feature of an angled gear meshing with a spur gear as can be easily deduced by one having the most basic skill in geometry.

Appellant argues "The '103 rejection of claims 7-9 and 14 also contains legal deficiencies. The '103 rejection does not comply with KSR because the final office

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action does not provide articulated reasoning to support obviousness. It does not provide any reasons for replacing Yokel's helical gears with Ovshinsky's bevel gears. The office action merely provides a bald conclusion of obviousness. Page 7 concludes that it would be "obvious ... to substitute gear pairs to achieve the predictable result of transmitting motion on angled shafts." Yet it provides no evidence to suggest that the results would be predictable. For instance, it does not consider that Yokel's assembly has different operational and structural requirements than Ovshinsky's assembly (turning a propeller versus turning a steering column). Due to this legal deficiency, the '103 rejection of claims 7-9 and 14 should be withdrawn."

In response, no such deficiency exists. First, KSR forecloses the argument that a specific teaching, suggestion, or motivation is required to support a finding of obviousness. See the recent Board decision *Ex parte Smith*, --USPQ2d--, slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007) (citing KSR, 82 USPQ2d at 1396)(available at <http://www.uspto.gov/web/offices/dcom/bpai/prec/fd071925.pdf>). However, although a specific teaching, suggestion, or motivation is not required to support a finding of obviousness, in this case, there is clear motivation to do so. Since the modification in question is a mere simple substitution a known element for another to achieve a result that would have been predictable to one of ordinary skill in the art at the time of the invention. Both Ovshinsky and Yokel disclose mating gear pairs for transmitting power between angled shafts. Ovshinsky teaches a spur gear (314) meshed with a face gear (312) to transmit motion, also between angled shafts. Because both Yokel and Ovshinsky teach utilizing meshing gears to transmit motion between angled shafts, it

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would have been obvious to one having ordinary skill in the art at the time of the invention to simply substitute one known gear pair which transmits motion between angled shafts for another known gear pair that also transmits motion between angled shafts to achieve the predictable result of transmitting motion between angled shafts.

With respect to claim 15, appellant argues "There is no teaching or suggestion in either patent to use a face gear having an angled flange to transmit power between inclined first and second shafts. More specifically, there is no teaching or suggestion in either patent to use a face gear including a hub on the second shaft, an angled flange around the hub, and gear teeth on the angled flange, the flange angled so the face gear achieves line contact with a spur gear on the first shaft when the gears are in mesh.

Thus, the office action omits elements necessary for establishing prima facie obviousness of base claim 15. Due to this factual deficiency, the '103 rejection of base claim 15 should be withdrawn. The '103 rejection of base claim 15 also contains legal deficiencies. The '103 rejection does not comply with KSR for the reasons above."

In response, again no such factual or legal deficiencies exist. First regarding the alleged factual deficiencies, the rejection, Stone, and Ovshinsky clearly lay out: use of a face gear (Ovshinsky 310, 312) having an angled flange (Ovshinsky's flange from which teeth shown at 312 extend, also Stone's flange from which teeth shown at 30 extend. Both flanges are clearly "angled" from a vector normal to their respective shafts) to transmit power between inclined first [shaft] (Ovshinsky 304, Stone 12) and second shafts (Ovshinsky 302, Stone 32). Next regarding the alleged legal deficiencies, Ovshinsky teaches a spur gear (314) meshed with a face gear (312) to transmit motion,

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also between angled shafts. Because both Stone and Ovshinsky teach utilizing meshing gears to transmit motion between angled shafts, it would have been obvious to one having ordinary skill in the art at the time of the invention to simply substitute one known gear pair which transmits motion between angled shafts for another known gear pair that also transmits motion between angled shafts to achieve the predictable result of transmitting motion between angled shafts.

Regarding claim 16, appellant argues "Claim 16, which depends from claim 15, recites that the first and second shafts have an angular variance of no more than 30 degrees. Thus, claim 16 recites the use of a face gear having a flange that is angled so the face gear on the second shaft achieves line contact with the spur gear on the first shaft when the gears are in mesh. The angular variance between Ovshinsky's drive and transfer shafts 98 and 124 is 90 degrees."

In response, here again the appellant has FALSELY REPRESENTED the rejection by introducing elements that were NOT USED in the rejection. That is to say, the rejection clearly stipulates that shafts (300, 302, and 304) are being used for the rejections, rather than shafts 98 and 124 as misrepresented by appellant.

Appellant argues "Ovshinsky does not teach or suggest the use of a face gear for an angular variance other than 90 degrees. Rather, as discussed in Argument 1, Ovshinsky teaches the use of a bevel gear 306/310/312 and pinion 314 to transmit power between shafts (302 and 304) angled at no more than 30 degrees. Therefore, the final office action provides no rational underpinnings to support its conclusion of

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obviousness of claim 16. Due to these additional legal and factual deficiencies, the '103 rejection of claim 16 should be withdrawn."

As discussed above Ovshinsky's bevel gear 306/310/312 anticipates appellant's claimed "face gear" simply because the appellant's own disclosure discloses a "face gear" as being on in which teeth are angled slightly toward a face. Appellant is attempting to rely on the purely semantic argument that a "bevel" gear is not a "face" gear. However, since appellant's disclosure discloses the claimed gear in question as being a gear with teeth that angled only slightly (i.e. less than 90 degrees, and further less than 30 degrees as in claim 14), one CANNOT imply that the claimed "face gear" must encompass a shaft angle of 90 degrees, for to do so would imply that appellant's disclosed invention is not encompassed by their own claim (emphasis added)! That is to say a bevel gear IS clearly a face gear as implied by appellant because the teeth of a bevel gear face slightly toward a gear face, or slightly towards an axial direction, rather than purely a radial direction. Here, clearly one must look to appellant's own disclosure to ascertain the meaning and definition of the term "face gear". Since no claimed structural distinction can be ascertained between appellant's "face" gear and Stone's or Ovshinsky's gears, the claims are clearly anticipated and/or rendered obvious respectively.

With respect to claim 10, appellant argues "Stone discloses a helicopter transmission including a power input shaft 12 that carries a beveled pinion 18, and an angled power output shaft 32 that carries a bevel gear 30 (col. 2, lines 11-38). The bevel gear 30 meshes with the pinion 18. Stone is concerned about gaining access to

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critical units in a gearbox (col. 1, lines 19-28), not point contact of the gears 18 and 30.

Page 8 of the office action alleges that gear 30 is a face gear and that gear 18 is a spur gear. However, Stone does not support the allegation. Stone clearly discloses that gear 30 is a bevel gear, and gear 18 is a beveled pinion (col. 2, lines 37-38). Ovshinsky also discloses bevel gears for transmitting power between non-parallel shaft sections 302 and 304. Ovshinsky does not teach or suggest using face and spur gears in place of Stone's bevel gear 30 and pinion 18. Thus, the machine produced by the combined teachings of Stone and Ovshinsky would not include a face gear, let alone the claimed face gear. Because the office action omits elements necessary to establish prima facie obviousness of claim 10, the '103 rejection of claim 10 should be withdrawn."

In response, the bevel gear 30 of stone reads on the "face gear" of appellant in that a bevel gear has teeth angled toward a face as is discussed in greater detail above. The office action does NOT assert that Stone's gear 18 is a "spur gear" as argued by appellant. This is another misrepresentation of the facts. The office action clearly stipulates that gear 18 of stone is a "gear". Ovshinsky is relied on for teaching a "spur gear". Additionally, while appellant argues that Stone is not concerned with point contact of gears, this fact is irrelevant. Point contact is neither claimed nor disclosed as being part of appellant's invention. Further, although not claimed, the spur gear taught by Ovshinsky is clearly capable of achieving the function of line contact.

Appellant argues "The '103 rejection of claim 10 also contains legal deficiencies because it does not comply with KSR. The office action merely provides a bald conclusion of obviousness. Page 9 concludes that it would be "obvious ... to substitute

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gear pairs to achieve the predictable result of transmitting motion on angled shafts." Yet it provides no evidence to suggest that the results would be predictable."

In response, as discussed above, Ovshinsky teaches a spur gear (314) meshed with a face gear (312) to transmit motion, also between angled shafts. Because both Stone and Ovshinsky teach utilizing meshing gears to transmit motion between angled shafts, it would have been obvious to one having ordinary skill in the art at the time of the invention to simply substitute one known gear pair which transmits motion between angled shafts for another known gear pair that also transmits motion between angled shafts to achieve the predictable result of transmitting motion between angled shafts. That is to say, the 103 rejection is NOT a bald conclusion of obviousness. The evidence is clear. The art of record clearly shows that transmitting motion between angled shafts can be achieved either with mating bevel gears, or with a spur gear mating with a bevel gear. That is to say, the angular difference can be made up a single gear, or by both gears. Such a teaching would be more than obvious to anyone having ordinary skill in the gear art.

Appellant argues "Ovshinsky's bevel and pinion gears are designed for a different purpose than the bevel and pinion gears 30 and 18 of Stone (turning a steering column versus rotating a helicopter blade). Ovshinsky's bevel gear 306/310/312 is designed for far, far lower loads and speeds than Stone's helicopter transmission. Point contact between bevel and pinion gears might not be a problem with turning a steering column. As for rotating a helicopter blade, Stone is silent about point contact between gears. So is Ovshinsky. Thus, neither Stone nor Ovshinsky provides underpinnings for replacing

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Stones gears 30 and 18 with the claimed face gear and a spur gear. Due to this additional legal deficiency, the '103 rejection of claim 10 should be withdrawn. The only discussion about point contact is provided by the applicant. Only the applicant describes an approach that overcomes the problem of point contact in power transmissions such as helicopter transmission. That approach is clearly recited in claim 10."

In response, intended use of the apparatus is here is irrelevant. However, clearly Stone discloses that gears are used in Helicopter transmissions. Further, point contact is not a claimed feature. Rather, line contact is, although not in the instant claim 10 being argued by appellant. Clearly the gears of Stone are used at the high speeds of a helicopter transmission as they are located within a helicopter transmission and any substituted gears would also be used at such speeds. Finally, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Terence Boes/

Examiner, Art Unit 3656

Conferees:

Richard Ridley

/Richard WL Ridley/

Supervisory Patent Examiner, Art Unit 3656

/David Okonsky/

Primary Examiner, Art Unit 3600